

Parviturbo weberi (Nautilus 59:55) was said to have two nuclear whorls, but this was a mistake of observation due to imperfect preservation. The examination of several fresh, immature specimens shows that there are not over one and one-fourth embryonic whorls.

In introducing *Parviturbo* (Nautilus 59:54) we alluded to the possibility that it would prove to be identical with *Pseudorbis* Monterosato, based upon the Sicilian *Fossarus granulum* Brugnone. It is equally likely that *Pseudorbis* is identical with *Parviturbooides*. Until the nuclear whorls or the dentition of *P. granulum* (Brugnone) can be examined, the nomenclature of our genera will remain unsettled.

NEW WEST AMERICAN TURRIDS

BY PAUL BARTSCH

In the preparation of the monograph of the Recent and Fossil East Pacific Turrids it became desirable to study the collections made by Mr. H. N. Lowe which are in the Academy of Natural Sciences of Philadelphia. Thanks to the good offices of the Academy and Dr. Pilsbry especially, these were placed in my hands for study. A comparison of this material with the collections in the U. S. National Museum makes it necessary to give nomenclatorial status to a number of species from that collection which are here described.

ADANAFLAVA ADANA new genus and species. Plate 6, figure 4.

Shell small, elongate-ovate, bright chestnut brown. The last of the remaining nuclear whorls is carinated. The postnuclear whorls have a weak cord at the summit followed by a concave sinial area which extends over about two-fifths of the turns and is marked by 4 spiral threads which are rendered feebly nodulose by the incremental lines. Anterior to the sinial area, the whorls are marked by protractively curved axial ribs which on the last whorl extend to the columella. These ribs are separated by spaces about twice as wide as the ribs, and the intercostal spaces are marked by 8 spiral threads separated by incised lines about half as wide as the threads. Base rather long, well rounded, with the intercostal spaces marked by 10 spiral threads equaling those on the spire in strength and spacing. These spiral threads

cross the axial ribs and render them feebly nodulose. The columella is stout, slightly twisted with a rather strong basal fasciole, posterior to which are 2 additional spiral threads equaling those of the spire, while anterior to it the columella is rather irregular and rough. Aperture elongate-ovate. Posterior sinus only moderately deep and rather broad and outward reflected at the edge. Anterior to the posterior sinus the outer lip is protracted and bears a weak stromboid notch a little posterior to its anterior limit. A strong varix is present a little distance behind the edge of the outer lip. The anterior canal is moderately long and rather narrow. The inner lip is reflected over and appressed to the base. The parietal wall is covered with a thick callus which forms a low hump at the posterior angle.

The type, Acad. Nat. Sci. Philadelphia No. 158582, was collected by Lowe at Manzanillo, Mexico. It has 8 whorls remaining and measures: Height, 12.2 mm.; greater diameter, 5.3 mm.; length of aperture, 6 mm.

IMAACLAVA PILSBRYI new species. Plate 6, figure 6.

Shell small for the genus, white with chestnut maculations; one row at the anterior end of the axial ribs, another at the suture. There is also an interrupted band of chestnut on the base, and the varix is of the same color. The nucleus consists of almost 2 well rounded, smooth turns. The postnuclear whorls are appressed at the summit and slope to the concave sinial area which covers the posterior half of the turns. The anterior half is marked by protractively slanting axial ribs which pass weakly over the base of the last whorl. Of these ribs, 9 including the varix are present on the last whorl. The axial ribs are about half as wide as the spaces that separate them. Base moderately long and moderately rounded. The spiral sculpture consists of very feeble incised lines in the sinial area and mere indications of incised lines in the intercostal spaces. On the base the spiral markings are represented by very poorly defined incised lines which, however, are more or less equally spaced. The columella is moderately long, moderately stout, and bears a fasciole about midway between its insertion and tip. Aperture elongate pear-shaped. Posterior sinus deep with the edge outward reflected. Posterior to the posterior sinus, the outer lip joins the heavy lump on the parietal wall at the posterior angle of the aperture. Anterior to the sinus it is protracted and bears a moderately thick stromboid notch a little posterior to its anterior margin; it also has a heavy varix at some distance behind its edge. The anterior canal is moderately long and moderately broad, and the

inner lip is reflected over and appressed to the columella. The parietal wall is covered by a thick callus which forms a conspicuous hump at the posterior angle of the aperture.

The type and 3 immature specimens, Acad. Nat. Sci. Philadelphia No. 164446, were collected by Dr. Pilsbry at Punta Penasco, Sonora, Mexico. The type has 9.5 whorls remaining and measures: Height, 20.2 mm.; greater diameter, 7.8 mm.; length of aperture, 8.1 mm.

This is the smallest of the three species here recognized. In ribbing it most nearly resembles *I. unimaculata*, but differs from this in its much smaller size and much weaker spiral sculpture.

ZONULISPIRA new genus

Shell varying from small to medium sized, varying in shape from elongate-ovate to ovate-conic, usually dark colored. The nuclear whorls consist of 1.5–2 small, round smooth turns which are followed by 1–1.5 whorls which are axially ribbed. The postnuclear whorls bear a moderately strong spiral cord a little anterior to the summit, which is followed anteriorly by a slightly concave, broad sinal area. The latter is bounded by an interrupted spiral series of nodules that have their long axis parallel with the spiral sculpture. These nodules may be simple or consist of 2 or 3 subnodules. Base rather long, moderately rounded, and marked by a varying number of spiral cords which, like the subsinal cord, bear elongated nodules. The columella is rather short and also bears strong spiral cords which grow finer near the tip. Between the nodulose cords, even on the narrow area at the summit, are lesser spiral threads which vary in strength and number in the different species. The nodules on the spiral threads are usually also arranged in axial series. The left outline of the base and columella is concave. Suture moderately impressed. Aperture irregularly pear-shaped. Outer lip with a deep round sinus which communicates with the edge through a slit about half the width of the sinus. Posterior to this sinus the shell is much thickened to form a hump. Anterior to the sinus the outer lip is protracted and rendered sinuous by the external sculpture; the inner lip is reflected over the short stout columella and usually shows a slight umbilical chink at the base. The parietal wall is covered with a heavy callus which joins the knob at the posterior angle. Operculum irregularly ovate, thin, with apical nucleus, marked by concentric lines of growth on the outside. Radula with marginals only, which have the two parts of the Y fused to form a hollow tube.

The type: *Zonulispira zonulata* Reeve (= *Pleurotoma zonulata* Reeve).

This genus ranges from the Gulf of California to Ecuador and Galapagos.

ZONULISPIRA REIGENI new species. Plate 6, figure 5.

Shell rather large, elongate-conic, blackish brown with the sub-sinal cord of the early whorls white, and the nodules on the later turns a little paler than the background. The nuclear whorls are decollated. The postnuclear whorls are not high between summit and suture and are marked by a strong spiral cord a little below the summit followed by a rather broad concave sinal area. Anterior to this, the median whorls bear an interrupted spiral series of nodules of which 8 are present on the antepenultimate whorl. On the last whorl this cord is narrow and scarcely distinguished from the basal cord with quite feeble nodules. Base rather long and moderately rounded and marked by 4 narrow spiral cords which are almost equally spaced. The columella is short, stout, and marked by 9 narrow spiral threads. In addition to this, fine incremental lines, which are a little stronger on the base than on the spire, mark the whorls and exceedingly fine spiral striations are present in the spaces between the spiral cords of spire and base. Suture slightly constricted. Aperture oval. Posterior sinus deep and rounded at base. Posterior to the posterior sinus, the outer lip is thickened into a lump-like element that connects with the parietal wall. Anterior to the posterior sinus, the outer lip is protracted and rendered slightly sinuous by the external sculpture. There is a strong varix at a little distance behind the edge of the outer lip. The anterior canal is short and broad; the inner lip is reflected over and appressed to the columella and extends over the parietal wall as a rather heavy callus.

The type and a paratype, Acad. Nat. Sci. Philadelphia No. 156406, were collected by Lowe at Mazatlan. The type has 7 whorls remaining and measures: Height, 21.7 mm.; greater diameter, 8.2 mm.; length of aperture, 9.4 mm.

This species recalls *Z. castanea*, but differs from it in having the spiral lirations of the sinus area exceedingly weak.

PILSBRYSPIRA new genus

Shell oval, bicolor with spiral zones of dark chestnut brown and yellowish white. One of the brown zones extends over the posterior half of the whorls; another is at the posterior termina-

tion of the base; another on the middle of the base, and another at the tip of the columella. The nuclear whorls are decollated in the unique type. The postnuclear whorls are marked with a slender spiral cord a little anterior to the summit; anterior to this is a moderately broad sinal area, while the anterior half of the whorls is marked by heavy, broad, low, rounded axial ribs separated by spaces less wide and crossed by 5 spiral cords which render the axial ribs of the spire slightly nodulose. The base is short, well rounded, and marked by 4 strong spiral cords which are slightly nodulose. The columella is short, stout, and bears spiral threads which decrease in size from the posterior anteriorly. In addition to that, numerous, hairlike incremental lines are present and fine, very closely spaced spiral lirations, which are very regular in size and spacing on the brown zone at the summit and coarser and less regular on the anterior half of the whorls and on the base. The aperture is oval. Posterior sinus deep and well rounded at base. Posterior to the posterior sinus, the outer lip is much thickened and joins the knob on the parietal wall. Anterior to the posterior sinus, the outer lip is protracted and bears a heavy varix immediately behind the edge of the outer lip. The anterior canal is moderately long and broad. The inner lip is reflected over and appressed to the columella.

Type: *Pilsbryspira pilsbryi* new species.

The presence of 5 slender spiral elongated nodules anterior to the sinal area distinguishes this genus from all the other members of the subfamily.

PILSBRYSPIRA PILSBRYI new species. Plate 6, figure 2.

Shell small, oval with a broad brown band which extends from the summit over the sinal area. There are 2 brown bands on the base separated by a light zone. The anterior tip of the columella is pale brown. The rest is yellowish white with a faint orange flush. Nuclear whorls decollated. The postnuclear whorls are moderately rounded. They bear a slender spiral thread at about one-sixth of the distance between summit and suture anterior to the summit. Anterior to this is a slightly concave sinal area which occupies about one-fourth of a turn. Anterior to the sinal area the whorls are marked by low, broad, rounded axial ribs which are separated by spaces much less wide than the ribs. These ribs extend over the base to the columella. Of these 12 are present on the last whorl. Between the sinal area and the suture the ribs are marked by 6 spiral cords. Base short, well rounded, and marked by 2 rather strong spiral cords on the posterior dark band, of which the first limits the dark zone, while the second is at some little distance posterior to its

anterior limit. The second dark zone is also marked by a strong, somewhat nodulose, spiral cord, while the white zone between the two bears a stronger, almost median, spiral cord. In addition to this, the entire surface of the whorls is marked by fine hairlike incremental lines and fine, closely spaced, spiral striations which are very regular and fine in the sinal area and posterior to the sub-summit cord, but heavier in the ribbed portion of the whorls and on the base, and in the stronger reaches they are somewhat variable in size. The columella is short, stout, and marked with 9 spiral cords which decrease in size from the posterior anteriorly. Suture moderately impressed. The posterior sinus is moderately deep and rounded at base. Posterior to the posterior sinus, the outer lip is thickened and joins the knob at the posterior angle of the aperture on the parietal wall. Anterior to the posterior sinus, the outer lip is protracted. It bears a very broad heavy varix a little distance behind the edge of the outer lip. Anterior canal short and broad. The inner lip is reflected over and appressed to the columella. The parietal wall is covered by a moderately thick callus.

The type, Acad. Nat. Sci. Philadelphia No. 153869, was collected by Dr. Pilsbry on Taboga Island, Panama. It has 7 whorls remaining and measures: Height, 12.3 mm.; greater diameter, 6.2 mm.; length of aperture, 6.4 mm.

DALLSPIRA new genus

Shell rather small, elongate-ovate, varying in color from unicolor yellowish white to blackish brown, or banded. The nucleus consists of 2 small, smooth turns followed by a whorl bearing protractively curved axial ribs. The postnuclear whorls may have a feeble cord at the summit or this usually is absent. The sinal area is moderately broad and moderately concave. Anterior to the sinal area, the whorls may be marked by axial ribs or mere nodules which sometimes almost become spinose. The base, which is moderately long and rounded, bears nodulose spiral cords. Aperture oval. Posterior sinus usually deep and well rounded at base, sometimes narrowed toward the edge of the lip. Posterior to the posterior sinus the outer lip is thickened and joins the parietal knob. Anterior to the posterior sinus the outer lip is protracted and rendered sinuous by the external sculpture. It bears a rather heavy varix a little behind the edge of the outer lip. The inside of the outer lip may or may not have spiral lirations, depending upon the species in question. The anterior canal is short and moderately broad. The inner lip is reflected over and appressed to the columella.

usually leaving an umbilical chink. The parietal wall is covered by a thick callus which terminates in a heavy knob at the posterior angle. Operculum elongate-ovate with apical nucleus, marked on the outside by concentric lines of growth. The radula bears marginals only, in which the Y basal portion is not equal, the lesser one being attached to the larger.

Type: *Dallspira dalli* new species.

This genus extends from the Gulf of California to Panama.

DALLSPIRA DALLI new species

Shell moderately large, ovate, blackish brown with a little paler zone on the posterior portion of the base and a narrow band at the insertion of the columella, while the nodules on the base are yellowish white. Nuclear whorls decollated. The post-nuclear whorls are appressed at the summit and have the merest indication of a slender spiral thread a little anterior to this. This thread is stronger on the early whorls, but fades out towards the last. The sinal area is narrow, occupying about a quarter of the whorls. This is marked by fine striations. Anterior to the sinal area the whorls are marked by very strong axial ribs which almost disappear at the suture but are indicated by the nodules on the base. These ribs are heaviest at their posterior termination and taper gently toward the suture. They are much narrower than the spaces that separate them. Of these 12 are present on the last whorl. The intercostal spaces are marked by slender, rather closely spaced, spiral lirations. Base moderately long, well rounded and marked by 3 series of nodules which are placed upon the axial ribs. The intercostal spaces between these nodules indicate a broad feeble spiral thread. The nodules themselves are very prominent and pearl-like. In addition to this, the base is marked by spiral lirations of about the same spacing as those between the ribs on the spire, but much less strongly impressed. The columella is short, stout, and marked by 15 spiral threads which grow consecutively stronger from the posterior anteriorly. Suture moderately impressed. Aperture elongate-ovate. Posterior sinus very deep, rounded at base, and narrowed at the edge of the aperture with the edge outward reflected. Posterior to the posterior sinus, the outer lip is thickened and joins the heavy hump at the parietal wall. Anterior to the posterior sinus, the outer lip is protracted and rendered decidedly sinuous by the external sculpture. The outer lip bears a moderately strong varix at a little distance behind its edge. Anterior canal short and broad. The inner lip is reflected over and appressed to the columella. The parietal wall bears a thick callus which develops into the strong hump

at the posterior angle. Operculum elongate-ovate with apical nucleus and marked on the outside by concentric lines of growth. The radula bears marginals only in which the Y basal portion is decidedly asymmetrical, one part being much smaller than the other and attached to the other.

The type, U. S. N. M. No. 484896, was collected by Miss Robson at Bella Vista, Panama. It has 8 whorls remaining and measures: Height, 16.7 mm.; greater diameter, 7 mm.; length of aperture, 7.2 mm. A topotype is in Miss Robson's collection.

This species most nearly resembles *D. lowei* from which it can readily be distinguished by its decidedly oblique ribs and much finer spiral striations.

DALLSPIRA LOWEI new species. Plate 6, figure 1.

Shell moderately large, ovate, blackish brown. Nuclear whorls decollated. The early postnuclear whorls bear a strong nodulose cord at the summit which rapidly fades and disappears on the later turns, leaving the merest indication of a spiral thread at some little distance below the suture, stronger than the appressed suture itself. This entire area, as well as the shallow, rather broad sinal area, is crossed by about a dozen rather strong spiral threads. Anterior to the sinal area the whorls bear short, slightly protractively slanting axial ribs which appear as elongated nodules, and which are not quite as wide as the spaces that separate them. Of these, 12 are present on the last whorl. The intercostal spaces are marked by 7 spiral threads which are separated by mere impressed lines. Base moderately long and marked by 3 series of rounded nodules corresponding in disposition with the axial ribs. They are connected by feebly indicated axial ribs. In addition to this, the entire surface of the base bears fine, closely spaced, low, spiral threads separated by mere impressed lines. The columella is short, stout, and marked by 13 spiral threads. Suture moderately constricted. Aperture elongate-ovate. The posterior sinus is deep, thickened and reflected. The outer lip posterior to the posterior sinus is thickened and joins the heavy knob of the parietal wall. Anterior to it it is protracted. It bears a heavy varix a little behind its edge. Anterior canal short and moderately broad. The inner lip is reflected over and appressed to the columella. The parietal wall is covered by a heavy callus which develops into a strong knob at the posterior angle.

The type, Acad. Nat. Sci. Philadelphia No. 155045, was collected by Lowe at San Juan del Sur, Nicaragua. It has 10

whorls and measures: Height, 14.7 mm.; greater diameter, 6.2 mm.; length of aperture, 6.2 mm.

The more slender form, less oblique ribs and much stronger spiral sculpture will readily distinguish this from *D. dalli*.

STRIOSPIRA new genus

Shell ranging from small to medium size; in shape from ovate to elongate-ovate. The surface bears a thin dark periostracum. The nucleus consists of about 3 turns of which the first 2 are small and smooth, while the rest bears protractively curved axial riblets. The postnuclear whorls bear a spiral cord a little below the summit which may be smooth or nodulose. Anterior to this is a broad sinal area, and anterior to the sinal area are axial ribs which may extend over the base or vanish before reaching this, depending upon the species. The posterior termination of these ribs frequently forms slight nodules, while on the basal portion there is no indication of nodulation. In addition to this the entire surface is marked by incremental lines and numerous spiral lirations which vary materially in strength in the different species. The base is well rounded, and the columella is usually short and stubby. Suture not conspicuous. Aperture irregularly oval. Posterior sinus well rounded, usually narrowed at the edge of the aperture. Posterior to the posterior sinus the outer lip is thickened into a knob which extends over the parietal wall. Anterior to the posterior sinus the outer lip is protracted and usually rendered denticulated by the external markings. Anterior canal short and moderately broad. The inner lip is reflected over and appressed to the base, in some of the forms leaving an umbilical chink anteriorly. The parietal wall is covered by a moderately thick callus which joins the lump at the posterior angle. Operculum elongate-ovate with apical nucleus showing concentric lines of growth on the outside. The radula bears marginals only in which the basal Y is approximated and fused.

Type: *Striospira lucasensis* new species.

This genus ranges from the Gulf of California to Ecuador,

STRIOSPIRA LUCASENSIS new species

Shell of medium size, elongate-ovate, chestnut brown. The nucleus consists of 2 small, smooth turns followed by a whorl having protractively slanting, heavy axial ribs which are as wide as the spaces that separate them. The postnuclear whorls have a feeble thread about one-fifth of the distance between the summit and suture anterior to the summit. This is followed by

the sinal area which covers about two-fifths of the turn. Anterior to this the whorls are marked by protractively slanting axial ribs. Of these 10 occur on the last whorl. These ribs evanesce on the base. The columella is short, stout, and rather straight. The spiral sculpture consists of fine microscopic lirations posterior to the heavy thread below the summit and 4 feeble threads in the sinal area, while in the intercostal spaces moderately deeply incised spiral lines separate 6 low, flat, rounded threads, while on the base the spiral sculpture consists of 14 threads a little narrower than those on the spire. The columella bears 28 spiral threads which vary materially in size and spacing. Operculum elongate-ovate with apical nucleus marked on the outside by concentric lines of growth. The radula bears marginals only, of which the Y portion is fused to practically form a single element.

The type, U. S. N. M. No. 267916, was collected by Bartsch at Cape San Lucas. It has 10.5 whorls and measures: Height, 17.2 mm.; greater diameter, 6.8 mm.; length of aperture, 8 mm. U. S. N. M. No. 266213 contains 3 topotypes from the same source. U. S. N. M. No. 566514 contains 2 specimens collected by Bartsch with a boat dredge at Mulege Bay, Gulf of California. U. S. N. M. No. 554252 contains 2 specimens collected by R. Hawkins, Jr., on gravelly bottom at Cerros Island. U. S. N. M. No. 566517 contains 2 specimens dredged by Hawkins in 12-18 ft. on fine black sand on the northwest side of Santa Inez Bay, about 2 miles west of Point Inez. U. S. N. M. No. 566518 contains 1 specimen dredged in 5 fms. about three-quarters of a mile off shore, 2½ miles southwest of Point Inez, Santa Inez Bay, on gray sand bottom. U. S. N. M. No. 566519 contains 1 specimen dredged about one-half mile off shore in coarse gray sand in 4.5 fms., 2 miles west of Inez Point, Santa Inez Bay. U. S. N. M. No. 558211 contains 1 specimen collected by Hawkins in 3-4 fms. in La Paz Bay. U. S. N. M. No. 56217 contains 1 specimen collected by Rich at Mazatlan.

This species is most nearly related to *S. luctuosa* but its larger size will readily differentiate it from that.

STRIOSPIRA TABOGAENSIS new species. Plate 6, figure 3.

Shell rather large, elongate-turreted, blackish brown. Interior of the aperture livid, brown at the edge. Nuclear whorls decollated. The postnuclear whorls show a feeble thread a little

below the summit scarcely differentiated from the rest of the spiral sculpture. The sinal area covers about one-fourth of the turns between this thread and the nodulose axial ribs. Anterior to the sinus the moderately strongly developed, axial ribs are present, which are slightly nodulose at the summit. These ribs, of which 13 are present on the last whorl, evanesce before reaching the middle of the base on this whorl. Base long, gently rounded. The columella is long and stout. The spiral sculpture consists of 7 low, slender, weak threads in the sinal area. Anterior to the sinal area, 8 low, flattened spiral threads are present, while on the base 15 similar threads occur. The anterior members of the base are considerably more elevated, in which respect they approach those of the columella. The columella bears 17 spiral threads. In addition to this, the whorls are marked by moderately strong incremental lines. Aperture oval. The posterior sinus is moderately deep and rounded. Posterior to the posterior sinus the outer lip is developed into a heavy lump which extends strongly over the parietal wall. Anterior to the posterior sinus, the outer lip is protracted and bears a rather strong, broad, stromboid notch a little posterior to its anterior termination. There is a heavy varix a little behind the edge of the outer lip. The anterior canal is short and moderately broad. The inner lip is thick, reflected over and appressed to the columella. The parietal wall is covered by a heavy callus.

The type, Acad. Nat. Sci. Philadelphia No. 153867, was collected by Dr. Pilsbry on Taboga Island. It has 7 whorls remaining and measures: Height, 20.2 mm.; greater diameter, 7.5 mm.; length of aperture, 9.1 mm. U. S. N. M. No. 219643 contains 2 worn specimens collected by Zetek at Pena Prieta Beach, Panama City.

SOME SHELLS OF CLEAR LAKE, NORTHERN MODOC COUNTY, CALIFORNIA

BY G. D. HANNA

A very large lake in northern Modoc County, California, is called "Clear Lake" on many maps and "Clear Lake Reservoir" on others. It has been variously modified from time to time, ostensibly for "reclamation" purposes, and at the southern end there is a large sign inscribed: "Clear Lake Bird Reserve U. S.